



# Introduction to Open Source GIS

**CNRA  
GIS  
Day**

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# What is “Open Source”?



**Open source software is software that can be**

**freely used**  
**changed**  
**and shared**

**(in modified or unmodified form)**

**by anyone.**


**Open source software is made by many people, and distributed under licenses that comply with the Open Source Definition.**

**- Open Source Initiative**



# Why Use Open Source?

# 1. It's Free



**Free software:  
Not “free” as in “beer”  
or “free” as in “freedom”.**

**“Free” as in “puppy”.**

**- Sarah Novotny, Community Manager for Nginx**



**Requires Upkeep**

**... but doesn't all  
software?**

## 2. Frequent Updates

# 3. Participate in Development



# 4. No “Black Box” Analysis



# 5. Multi-platform



# Do I Have to Choose a Side?



**Don't Choose. Be Open.**

**More Tools = Quicker + Better Results**



# What Software is Available?

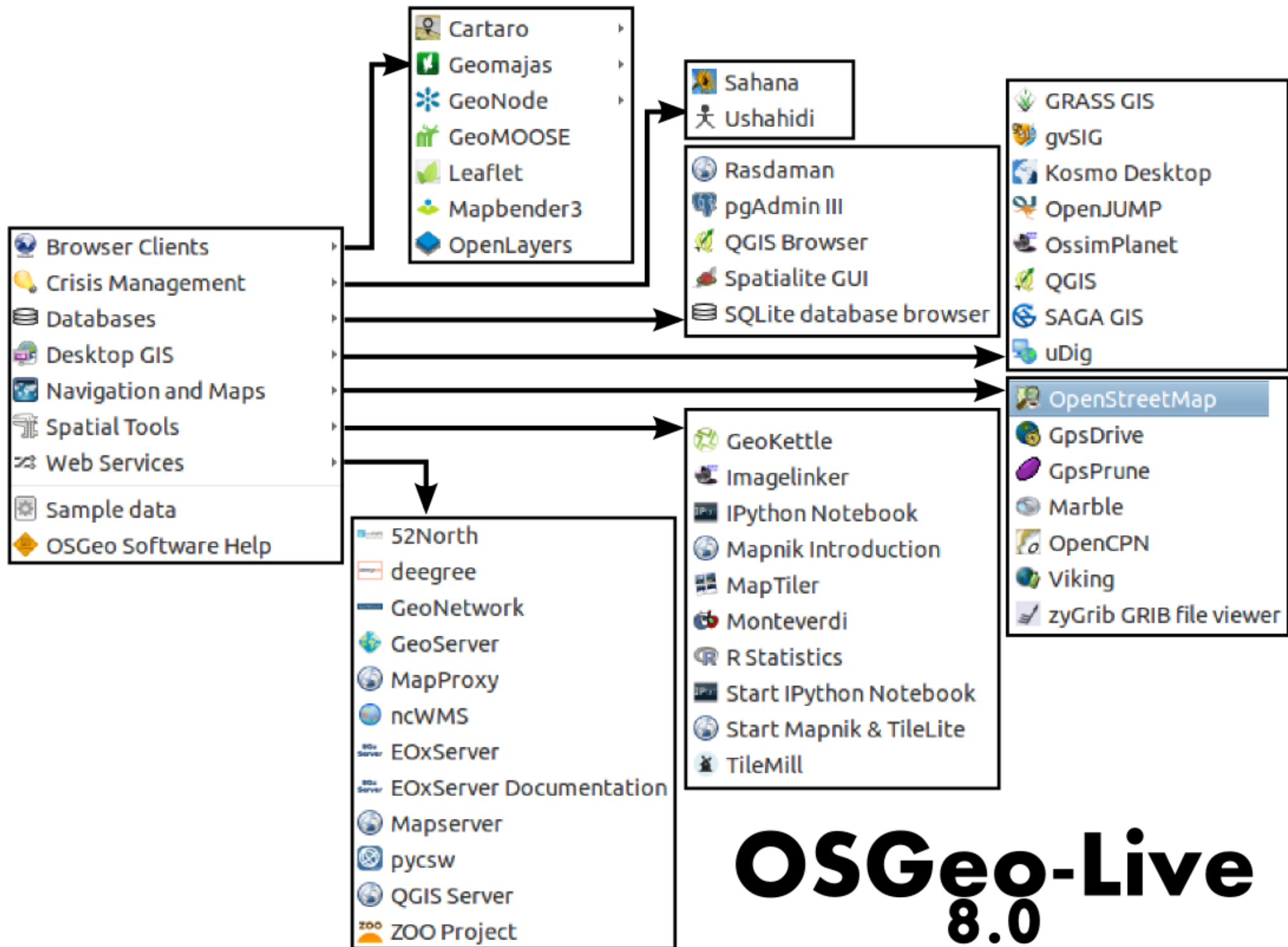


# OSGeoLive

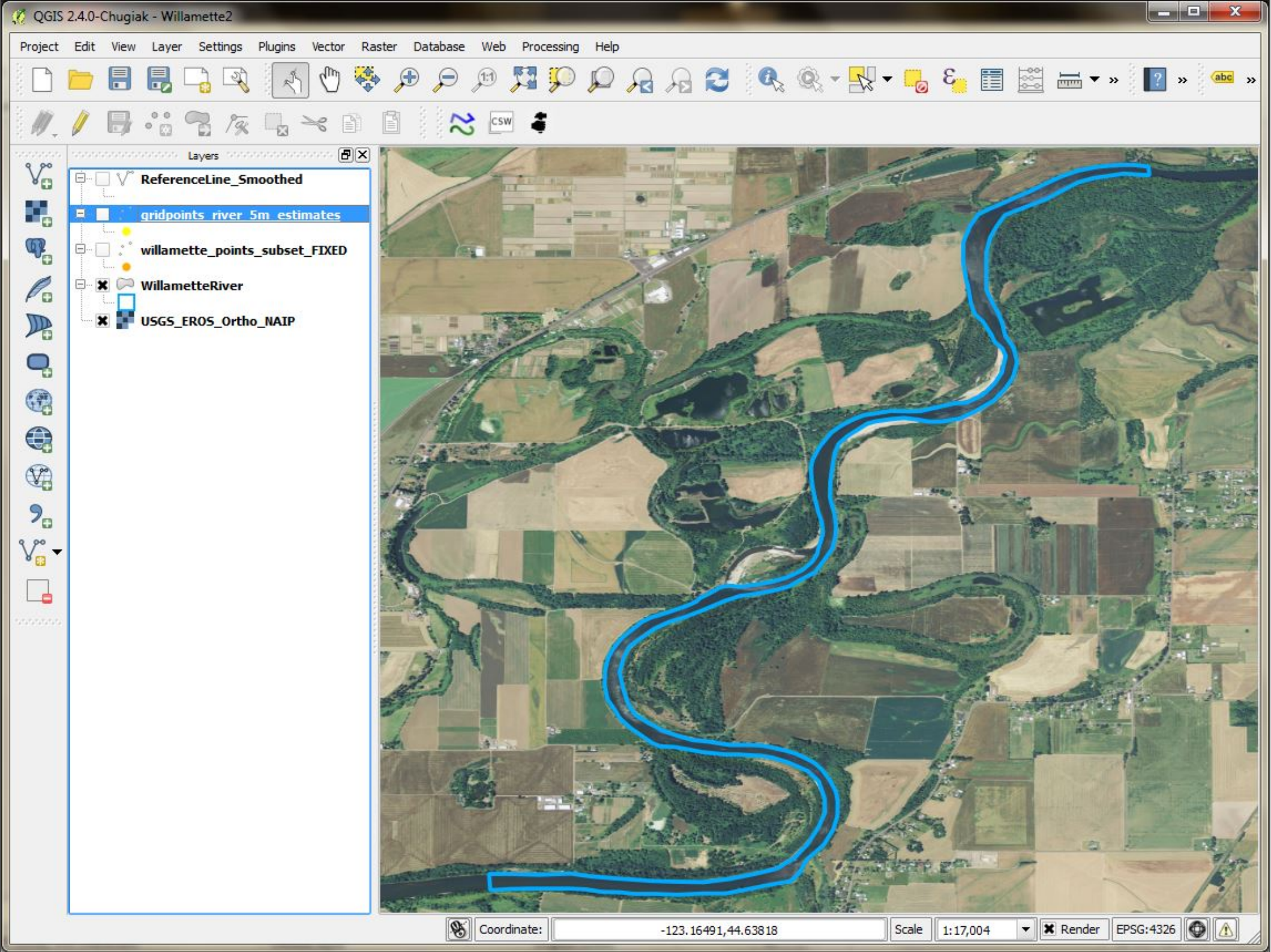


**live.osgeo.org**

**Try MANY software  
options without  
installation**



# QGIS



# Editing

# Add Data



# Map Navigation

# PostGIS

pgAdmin III

File Edit Plugins View Tools Help

Object browser

- Server Groups
  - Servers (3)
    - ceqa (localhost:5433)
      - owl (192.168.1.102:5432)
        - Databases (5)
          - NurseSloughFull
            - Catalogs (2)
            - Extensions (1)
            - Schemas (1)
              - public
                - Collations (0)
                - Domains (0)
                - FTS Configurations (0)
                - FTS Dictionaries (0)
                - FTS Parsers (0)
                - FTS Templates (0)
                - Functions (893)
                - Sequences (60)
                - Tables (133)
                  - badspots
                  - gridpoints\_and\_tracklines
                  - gridpoints\_few\_and\_tracks
                  - gridpoints\_few\_and\_tracks\_
                  - gridpoints\_sn\_zone1
                  - gridpoints\_sn\_zone2
                  - gridpoints\_sn\_zone3
                  - gridpoints\_sn\_zone3\_2
                  - gridpoints\_sn\_zone4
                  - gridpoints\_sn\_zone4\_2
                  - gridpoints\_sn\_zone5
                  - gridpoints\_sn\_zone6
                  - gridpoints\_sn\_zone7
                  - gridpoints\_sn\_zone8
                  - gridpoints\_xy\_all
                  - gridpoints\_xy\_all\_2
                  - gridpoints\_xy\_all\_clip
                  - gridpoints\_xy\_all\_subset
                  - gridpoints\_xy\_evens
                  - gridpoints\_xy\_few
                  - gridpoints\_xy\_zone1
                  - gridpoints\_xy\_zone1\_clip
                  - gridpoints\_xy\_zone1\_few
                  - gridpoints\_xy\_zone2
                  - gridpoints\_xy\_zone2\_clip

Properties

| Property           | Value           |
|--------------------|-----------------|
| Name               | NurseSloughFull |
| OID                | 25733           |
| Owner              | michele         |
| ACL                |                 |
| Tablespace         | pg_default      |
| Default tablespace | pg_default      |
| Encoding           | UTF8            |
| Collation          | en_US.UTF-8     |
| Character type     | en_US.UTF-8     |
| Default schema     | public          |

Query - NurseSloughFull on michele@192.168.1.102:5432 \*

File Edit Query Favourites Macros View Help

SQL Editor Graphical Query Builder

Previous queries [Delete] [Delete All]

```
SELECT * FROM gridpoints_xy_all
LIMIT 100;
```

Output pane

Data Output Explain Messages History

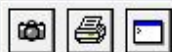
|   | gid<br>integer | depth<br>numeric | geom<br>geometry(Point,2226)       | pk<br>integer |
|---|----------------|------------------|------------------------------------|---------------|
| 1 | 17288047       | 2.23474          | 0101000020B208000062ECB2A3E7245941 | 87313         |
| 2 | 17288048       | 0.23344          | 0101000020B2080000C58554D9F5215941 | 87314         |
| 3 | 17288048       | 2.23474          | 0101000020B2080000D5F89B89E7245941 | 87315         |
| 4 | 17288049       | 0.20607          | 0101000020B2080000777081FCF5215941 | 87316         |
| 5 | 17288049       | 2.23474          | 0101000020B20800004805856FE7245941 | 87317         |
| 6 | 17288050       | 0.18911          | 0101000020B2080000285BAE1FF6215941 | 87318         |
| 7 | 17288050       | 2.23474          | 0101000020B2080000BA116E55E7245941 | 87319         |
| 8 | 17288051       | 0.18629          | 0101000020B2080000D945DB42F6215941 | 87320         |

OK. Unix Ln 2, Col 11, Ch 43 100 rows. 211 ms

Retrieving details on database NurseSloughFull... Done. 0.00 secs



R

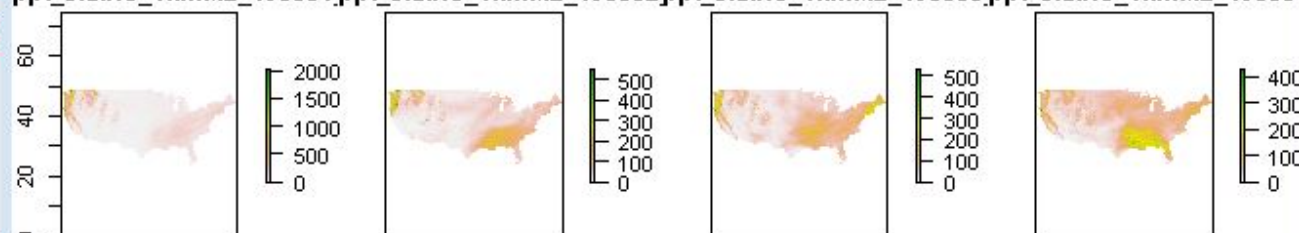


## R Console

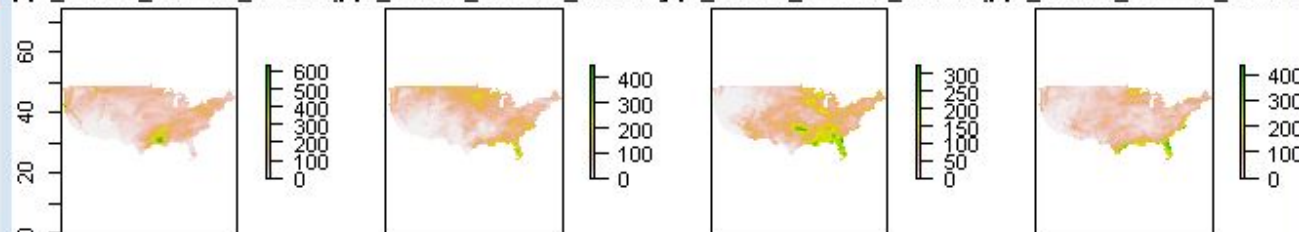
```
>
> ##### Data Processing
> setwd(RasterFolder)
> RasterFiles<-dir(RasterFold
> #RasterFiles<-dir("C:\\User
> points<-readShapePoints(Poi
> q<-raster()
> qstack<-stack(q)
>
> for (i in RasterFiles) {
+ s<-raster(i)
+ qstack<- addLayer(qstack, s
+ }
>
> samples<-extract(qstack, po
> newnames<-c()
>
> for (i in RasterFiles) {
+ x<-substr(i, 24, 29)
+ newnames<-c(newnames, x)
+ }
>
> name<-as.vector(levels(poin
> plot(qstack)
> |
```

## R Graphics: Device 2 (ACTIVE)

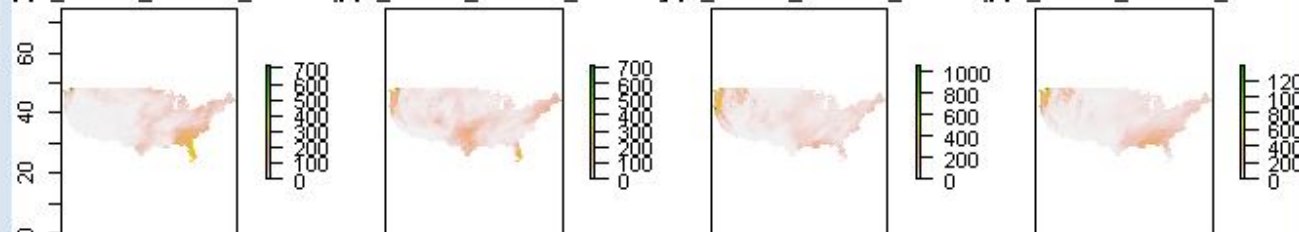
ppt\_stable\_4kmM2\_195301 ppt\_stable\_4kmM2\_195302 ppt\_stable\_4kmM2\_195303 ppt\_stable\_4kmM2\_195304



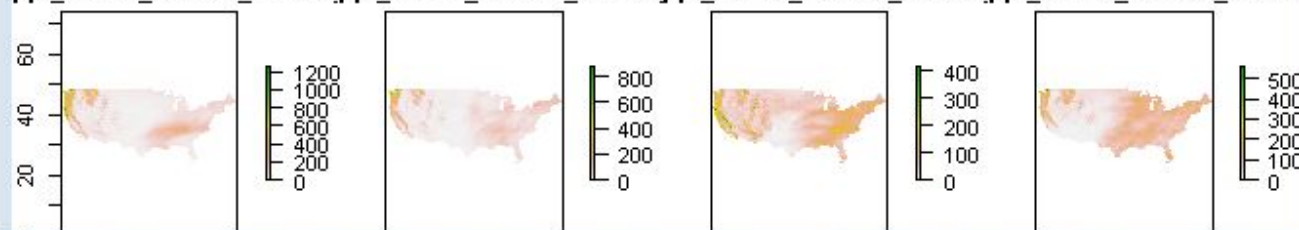
ppt\_stable\_4kmM2\_195305 ppt\_stable\_4kmM2\_195306 ppt\_stable\_4kmM2\_195307 ppt\_stable\_4kmM2\_195308

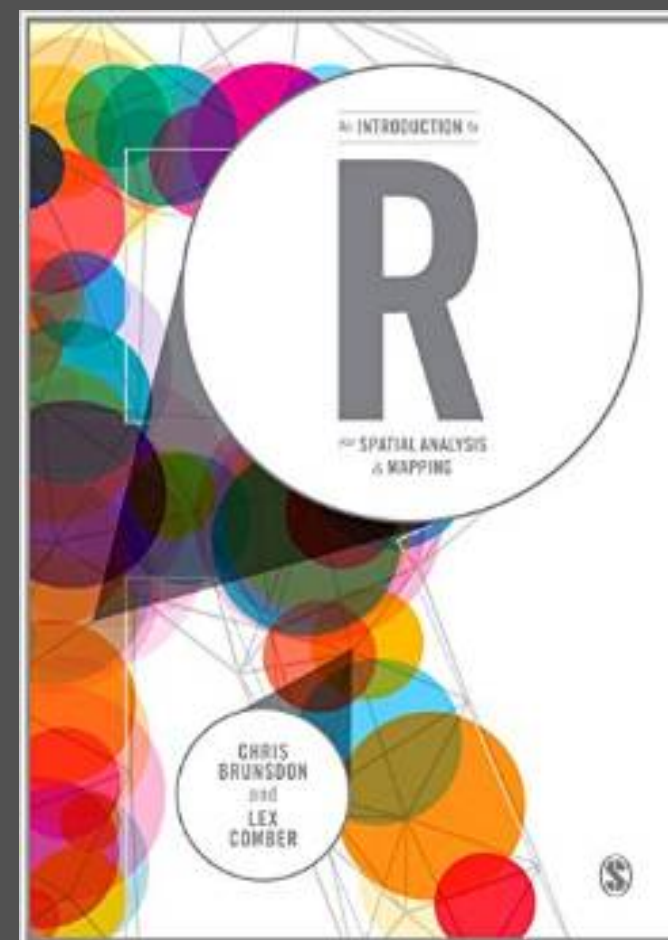
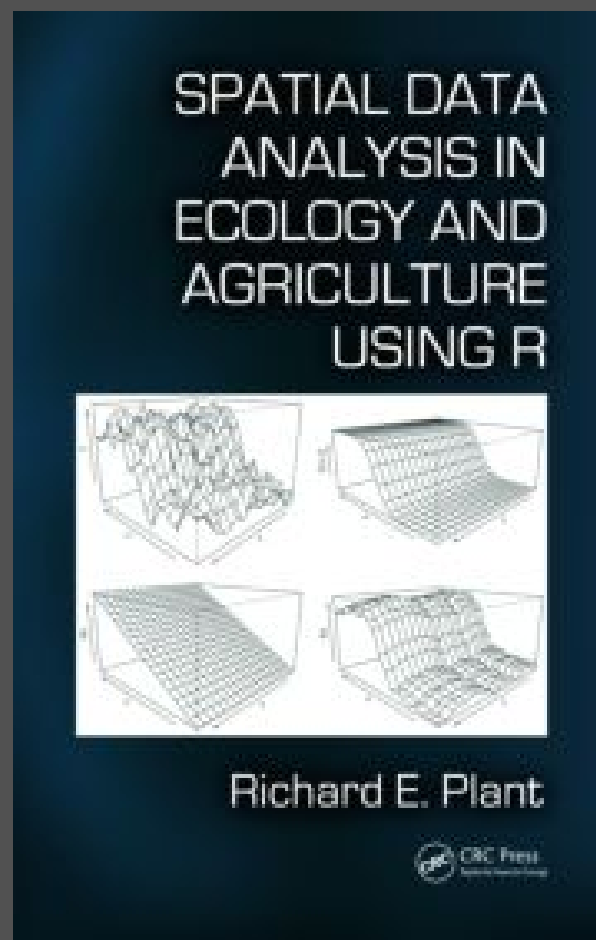
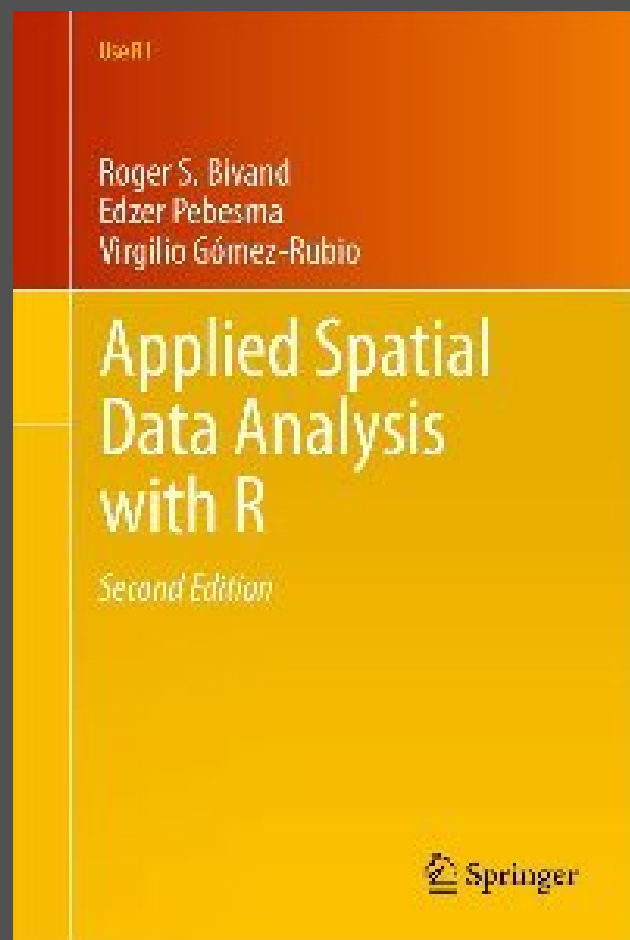


ppt\_stable\_4kmM2\_195309 ppt\_stable\_4kmM2\_195310 ppt\_stable\_4kmM2\_195311 ppt\_stable\_4kmM2\_195312



ppt\_stable\_4kmM2\_195401 ppt\_stable\_4kmM2\_195402 ppt\_stable\_4kmM2\_195403 ppt\_stable\_4kmM2\_195404





# Community



# Open Source Geospatial Foundation

Open Source Geospatial Software  
Community [OSGeo.org](http://OSGeo.org)

+ California Chapter

## FOSS4G

Open Source Geospatial Software  
Conferences [foss4g.org](http://foss4g.org)



# Upcoming Conferences:

**FOSS4G North America –  
March 9-12, Burlingame, CA**

**FOSS4G – Sept. 14-19, Seoul,  
Korea**

# Questions?

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